



Envisioning the Grid of 2045: How Much Transmission Is Needed?

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Overview

Public Advocates Office

- We are the independent consumer advocate at the California Public Utilities Commission with a mission to advocate for the lowest possible rates for customers of regulated utilities consistent with safety, reliability and the state's climate goals.

Our Focus

- New transmission is going to be a key component to achieving our 2045 carbon zero goals. We need to work together to:
 - Identify need
 - Control Costs
 - Minimize risks to utility customers

Why California Must Get This Right:

- Electric rates are steadily rising.
 - Can new financing methods lead to lower costs for ratepayers?
 - When will advanced technologies produce efficiencies/ lower costs?
 - What is causing transmission cost overruns and what can we do?

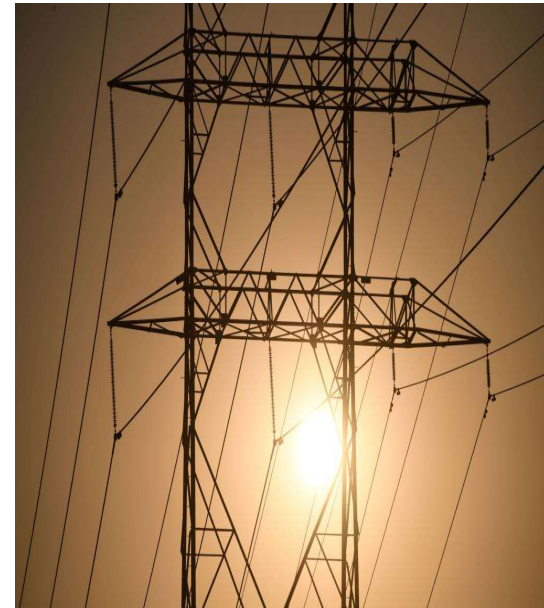
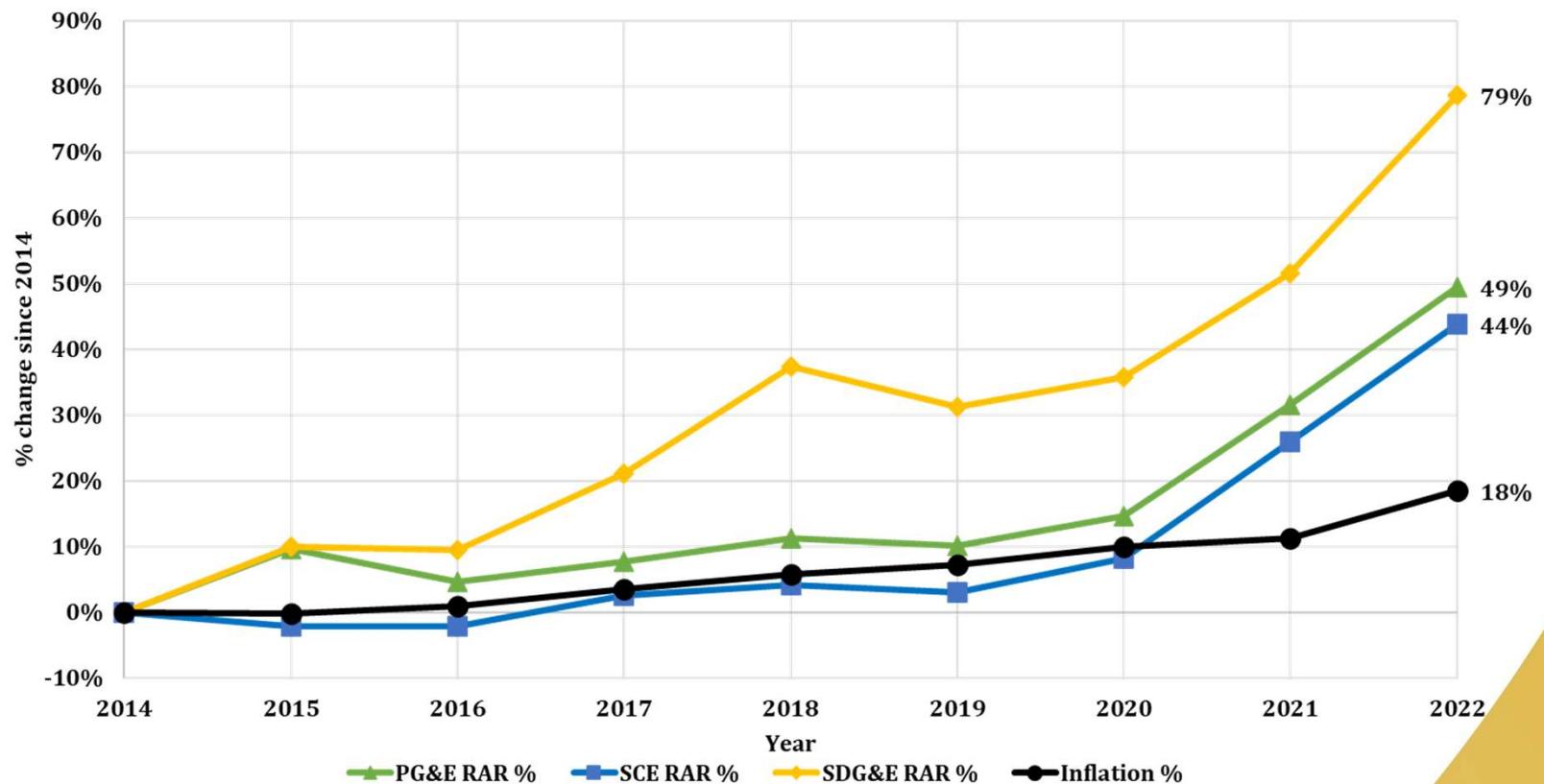


Photo Source: KQED

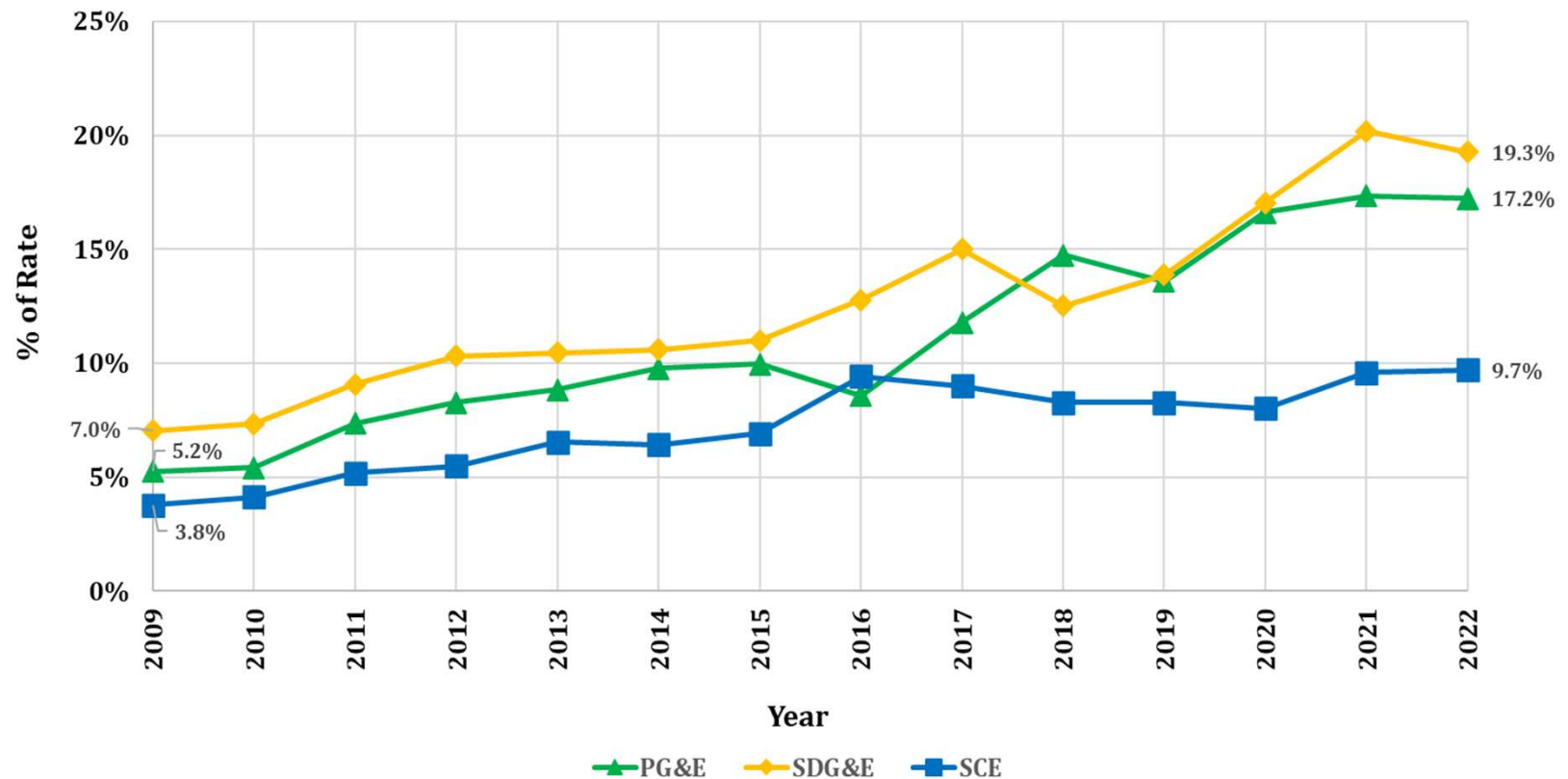
Electric Rates have increased since 2014, surpassing Inflation

Utility Year Over Year Residential Average Rate (RAR) Increases Relative to Inflation



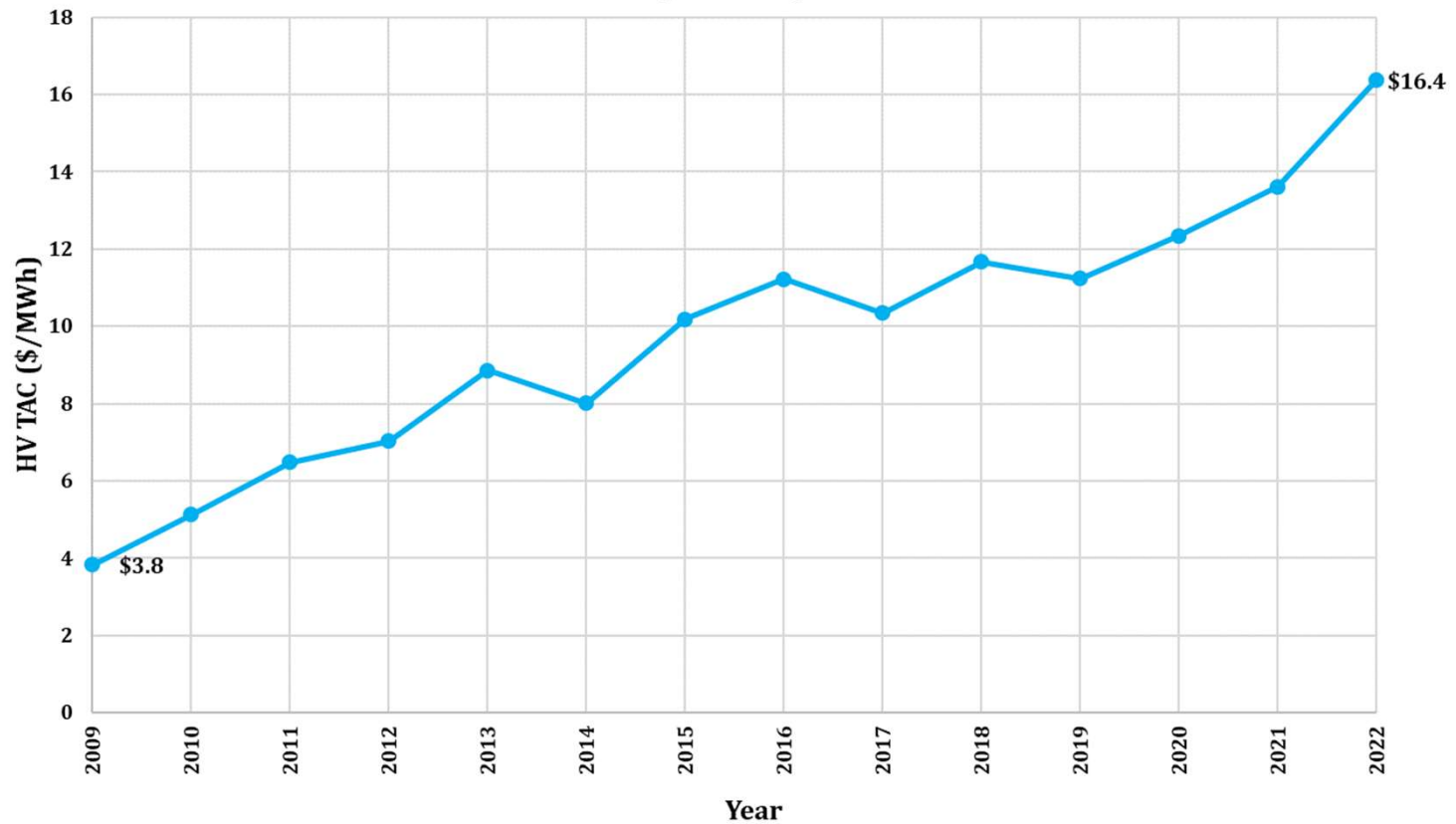
Transmission Costs are a Growing Portion of Rates

Transmission's Percentage of Residential Average Rate



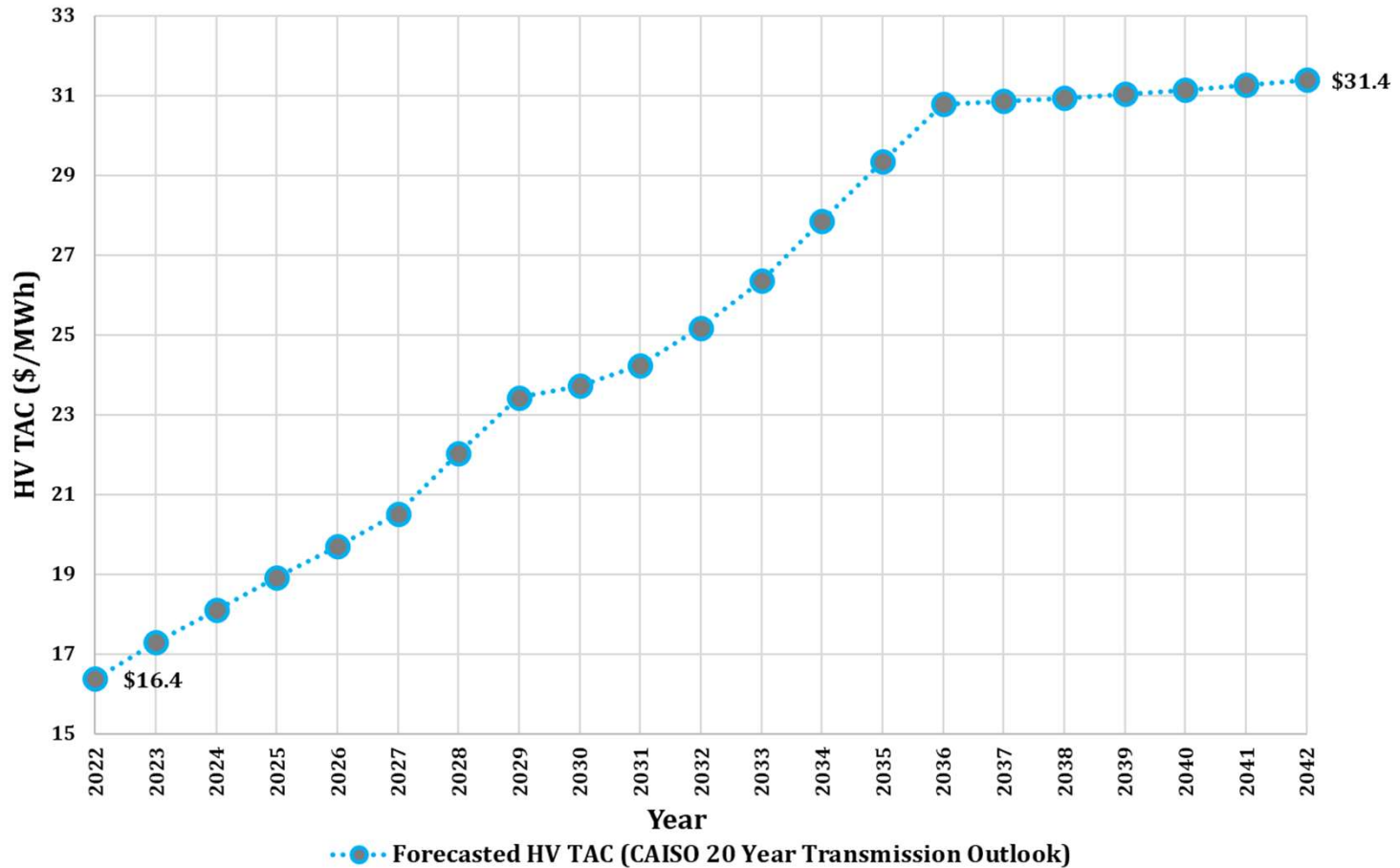
Transmission Costs have increased since 2009

Historical High Voltage Transmission Access Charge
(HV TAC)



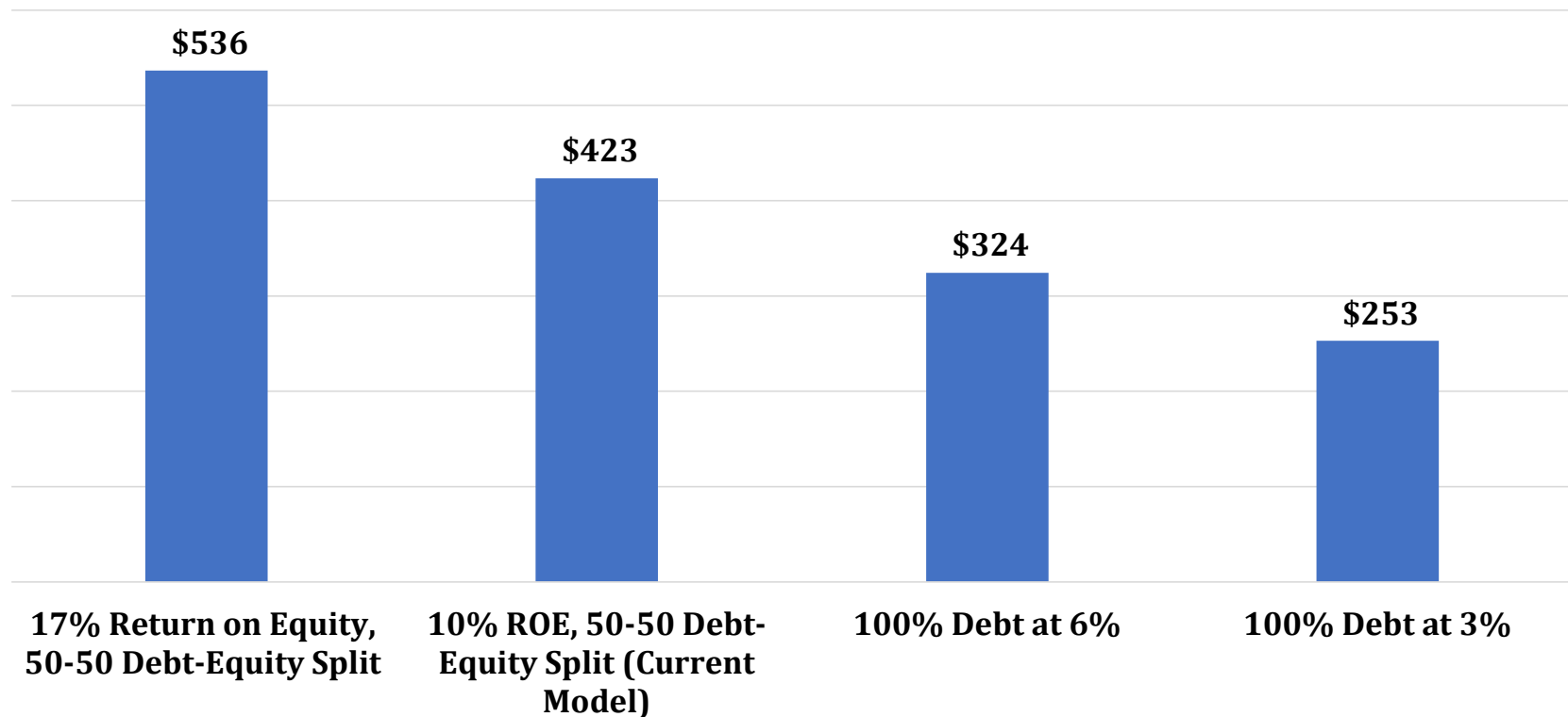
Transmission Costs are forecasted to increase further

High Voltage Transmission Access Charge (HV TAC) Forecast



How does the cost of capital impact transmission?

Estimated Cost to Ratepayers Over 40 Years for a Hypothetical \$300M Transmission Project (in Net Present Value terms)



Can Advanced Technologies Defer or Avoid Transmission Costs?

- Energy storage can potentially defer the need for new transmission.
- A 2022 Report from the Department of Energy highlighted the financial benefits of grid-enhancing technologies, which can increase transmission system capacity.

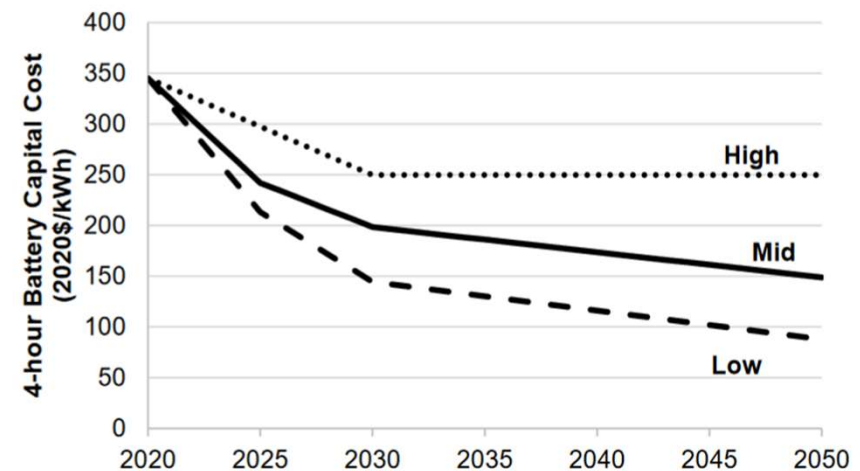
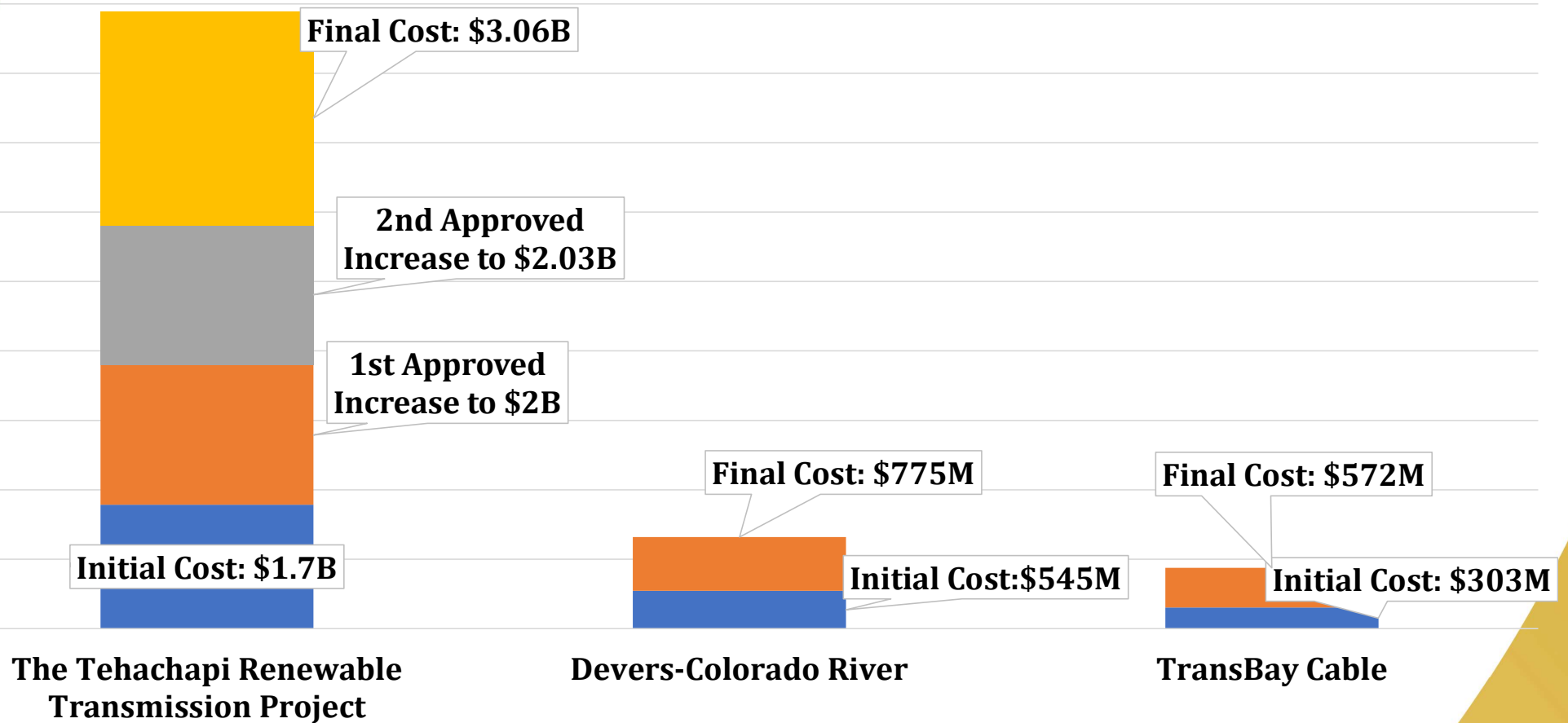


Figure ES-2. Battery cost projections for 4-hour lithium ion systems.

National Renewable Energy Laboratory, *Cost Projections for Utility-Scale Battery Storage: 2021 Update*, June 2021

Can We Reduce Transmission Cost Overruns?



Conclusions

1. We should consider alternatives to financing transmission projects.
2. We need to ensure that advanced technologies are incorporated into transmission planning and transmission projects.
3. We need to address transmission project cost overruns.



Photo Source: Sohagi Law Group



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